SYSTEM OPERATIONAL REQUEST: #2011-02

The following State, Federal, and Tribal Salmon Managers have participated in the preparation and support this SOR: National Marine Fisheries Service, US Fish and Wildlife Service, Washington Department of Fish and Wildlife, Idaho Department of Fish and Game, Oregon Department of Fish and Wildlife, the Shoshone-Bannock Tribes, the Columbia River Inter-Tribal Fish Commission..

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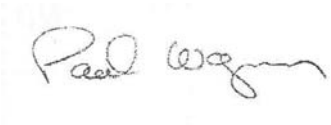

FROM: Paul Wagner, Chairperson, Salmon Managers

DATE: April 12, 2011

SUBJECT: Lower Monumental Spill Pattern

SPECIFICATIONS:

Beginning immediately, use the uniform spill pattern at Lower Monumental Dam (2011 FPP, Table LMN-13) when day average flows at Lower Monumental Dam are expected to be at or above 100 Kcfs. The ERDC modeling trip planned for next week will be used to evaluate whether reducing the flow trigger to 80 or 90 Kcfs for this change is advisable. When day average flows at Lower Monumental are expected to be below this trigger, use the bulk spill pattern at Lower Monumental Dam (2011 FPP, Table LMN-12).

JUSTIFICATION:

Concerning spill patterns at Lower Monumental Dam, the 2011 Spring Fish Operation Plan[1] states:

> **Changes in Operations for Research Purposes:**
> • Spring research operations: There are no special spill operations for research planned in 2011. The "bulk" spill pattern as described in FPP Section 7 will be used. Based on previous years' study results, dam survival is higher using the "bulk" spill pattern compared to the "uniform" spill pattern.

While the bulk pattern can show higher survival under certain flow and power house loading conditions, the conditions prevailing at the current time and going forward for the next several weeks favor the use of the uniform spill pattern. The uniform pattern can create a large eddy when the power house is lightly loaded. This eddy increases the risk to both fish that passed over the spillway and fish that are discharged through the juvenile bypass pipe. Under the existing conditions of a more fully loaded powerhouse the uniform pattern will not create a large eddy and will increase the number of fish being passed by way of the spillway by allowing higher spill volume.

The Ice Harbor forebay TDG monitor is typically the limiting factor for the Lower Monumental spill caps. In the 2009 study of bulk and uniform spill patterns at Lower Monumental Dam, the spill cap at Lower Monumental Dam was routinely higher when operating under the uniform pattern than when operating under the bulk pattern. This indicates that TDG from Lower Monumental may be reduced if Lower Monumental Dam were to be operated under the uniform spill pattern. During this test, average spill proportions under the two spill patterns were 0.27 for the bulk spill pattern and 0.38 for the uniform spill pattern.

Using a uniform spill pattern at Lower Monumental Dam when flows are at or above 100 Kcfs would generate less total dissolved gas and allow a higher proportion of juvenile fish to pass Lower Monumental Dam via spillways, while not detracting from direct survival.

[1] http://www.nwd-wc.usace.army.mil/tmt/agendas/2011/0323_Spring_Fish_Operations_Plan.pdf.